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OBSERVATIONS AND CONJECTURES ON THE U.S. EMPLOYMENT MIRACLE

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No. 97-16 August , 1997

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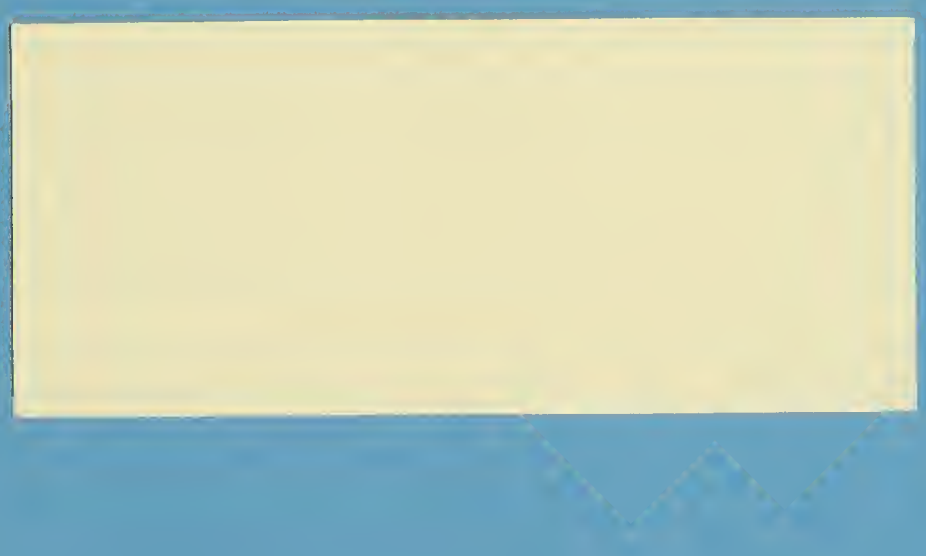

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Observations and Conjectures on the U.S. Employment Miracle

Alan B. Krueger
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Abstract

This paper has three goals; first to place U.S. job growth in international perspective by exploring cross-country differences in employment and population growth. This section finds that the U.S. has managed to absorb added workers—especially female workers—into employment at a greater rate than most countries. The leading explanation for this phenomenon is that the U.S. labor market has flexible wages and employment practices, whereas European labor markets are rigid. The second goal of the paper is to evaluate the labor markets rigidities hypothesis. Although greater wage flexibility probably contributes to the U.S.'s comparative success in creating jobs for its population, the slow growth in employment in many European countries appears too uniform across skill groups to result from relative wage inflexibility alone. Furthermore, a great deal of labor market adjustment seems to take place at a constant real wage in the U.S. This leads to the third goal: to speculate on other explanations why the U.S. has managed to successfully absorb so many new entrants to the labor market. We conjecture that product market constraints contribute to the slow growth of employment in many countries.

Observations and Conjectures on the U.S. Employment Miracle

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*We thank Roope Uusitalo for excellent research assistance, and Lars Calmfors, David Card, John Dunlop, Jim Heckman, Bertil Holmlund, Joachim Möller, Sherwin Rosen, and Cecilia Rouse for helpful comments. Naturally, the authors are responsible for all views expressed. This paper expands the analysis in an earlier paper by Alan Krueger entitled "The U.S. Employment Miracle in Perspective." The data from the "Qualifications and Careers" survey was obtained from the German Zentralarchiv für Empirische Sozialforschung at the University of Köln (ZA). The data were collected by the Bundesinstitut für Berufsbildung and the Institut für Arbeitsmarkt und Berufsforschung. Neither the producers of the data nor the ZA bear any responsibility for the analysis or interpretation of the data in this paper.

Compared to most of Western Europe, employment growth in the U.S. has been impressive. Between 1985 and 1995, for example, employment grew by 16.6% in the U.S. and by an average of just 5.7% in Germany, France and the U.K.[1] Employment growth in the private sector has been especially impressive in the U.S. Strong employment growth has caused the unemployment rate in the U.S. to fall below 5% in April 1997 for the first time since 1973. Meanwhile, the unemployment rate exceeds 8% in much of Western Europe, Canada and Australia. With these statistics as background, it is not hard to see why the recent U.S. experience is frequently characterized as an *employment miracle*.

A longer term perspective reveals that U.S. employment growth has been remarkably steady since the Great Depression, growing by at least 10% in each of the 58 ten-year intervals since 1940, and by more than 15% in all but five of these intervals. U.S. employment growth has been aided by comparatively fast population growth. For example, between 1985 and 1995 the working-age population in the U.S. increased by 11.4%, while it increased by an average of 6.8% in Germany, France and the U.K. combined.

This paper has three goals. First, to put the U.S. employment growth in international perspective. A large share of the stronger employment growth in the U.S. is attributable to comparatively faster growth of the working-age population in the U.S. Nonetheless, the U.S. has managed to absorb added workers -- especially female

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[1]These figures, and subsequent employment figures in the paper, are based on BLS data which put foreign countries on a similar basis as the U.S. OECD employment figures are generally similar. One major difference, however, is that the BLS data pertain to West Germany after unification.

workers -- into employment at a greater rate than most countries. How has the U.S. economy created so many jobs for our growing population? The leading explanation is that the U.S. labor market is *flexible*, and European labor markets are *rigid*. The flexibility applies to the level of real wages as well as relative wages. The second goal of the paper is to evaluate the labor market rigidities hypothesis. Although greater wage flexibility probably contributes to the U.S.'s comparative success in creating jobs for its population, there are some facts that challenge the paramount importance of this feature of the labor market. Most importantly, the slow growth in employment in many European countries appears too uniform across skill groups to result from relative wage inflexibility. Furthermore, a great deal of labor market adjustment seems to take place at a constant real wage in the U.S. This leads to the third goal of the paper: To speculate on other explanations why the U.S. has managed to successfully absorb so many new entrants to the labor market.

I. An Analysis of Employment Growth in 10 Countries

The analysis makes use of the Bureau of Labor Statistics's (BLS) international estimates of employment and population. These data use U.S. concepts of employment and working-age population for 10 major countries. Briefly, the BLS adjusts official country estimates reported to the OECD for breaks in series and for major deviations in employment concepts. The minimum working age is typically set at the compulsory schooling age in the country (14-16). The U.S. employment data do not have an upper age limit, so adjustments were made to the data for countries which limited employment

to workers below a certain age. Population pertains to the civilian population that is older than the minimum working age. The data are annual, from 1959 through 1995 for 10 major countries.[2] (See Godbout, 1993 for more details of the BLS international data.)

To estimate long-term trends in U.S. and German employment, the first column of Table 1 presents regression estimates of the log of total employment on a linear year term and individual country dummies. Over this long period, U.S. employment growth exceeded the rest of the sample by approximately 1 percentage point per year, while Germany's trailed the rest of the sample by about 0.7 points per year. In column 2, the log of the working-age population is added to the regression model. Interestingly, in this model the U.S. trend term falls to .40 percentage points above the world trend; thus, about 60 percent of the faster U.S. employment growth can be accounted for by faster population growth in the U.S.[3] According to column (2), slower population growth in Germany accounts for much, but not all, of its lower trend-growth of employment.

The models in column 1 and 2 constrain the effect of population growth to be the same in all countries. This may not be the case. For example, various economic and social rigidities may cause different countries to translate population growth into job growth at different rates. In column (3), the population variable is interacted with 10 country dummy variables, to allow for differential effects of population growth on employment. The countries can be grouped into three groups: countries where a

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[2]For Australia, comparable employment data are only available for 1964-95, and for the Netherlands they are only available for 1973-95.

[3]Godbout (1993) also finds that faster population growth is a major reason for the stronger employment growth in the U.S.

proportionate increase in population is associated with more than a proportionate increase in employment (U.S., Canada, the Netherlands); countries where employment growth is proportionate to population growth (Australia, Japan, and Sweden); and countries where employment growth is less than proportionate with population growth (France, Germany, Italy and the U.K.).

Figure 1 graphically illustrates the relationship between employment growth and population growth, over five-year intervals. A regression through these points indicates that population growth accounts for 56 percent of the variability in employment growth. Moreover, the slope of the relationship is 1.27. Thus, over five-year intervals, employment rises somewhat more than proportionately with population growth.

The aggregate employment data mask important differences in the labor market treatment of men and women across countries. Columns 4-6 of Table 1 present the same set of regression models for men, and columns 7-9 present estimates for women.[4] The U.S. superior trend growth in employment is greater for women than for men. Moreover, columns 6 and 9 indicate that the relationship between population growth and employment growth varies by gender within several countries. In Japan and Germany, growth in female population hardly translates into greater employment. In the Netherlands, the coefficient on population is over three times as great for women as for men.[5] International differences in the relationship between population growth and employment

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[4]These regressions are based on unpublished data provided by the BLS. We thank Connie Sorrentino for providing these data.

[5]The Netherlands has an extremely high rate of part-time employment among women, which may explain the high coefficient for women (see Godbout, 1993).

growth are much greater for women than they are for men.

We have also used OECD employment data for a wider set of countries to estimate the aggregate models in Table 1. Interestingly, the unweighted regression estimate of the model in column (2) with OECD data for 24 countries produce a coefficient on log population that is a little less than 1. However, if the OECD data are restricted to the 10 countries used in Table 1, the coefficient rises to 1.16 with a standard error of .04.[6] Thus, for the industrialized world as a whole, to a first order approximation, countries tend to absorb population growth roughly in proportion to the workers' employment rate. This is not quite Says Law -- because there may be unemployment even if employment rises at the same rate as population -- but it does suggest that the supply of workers creates demand for many of those workers.

The re-unification of East and West Germany provides a unique opportunity to test the ability of a country to provide jobs for a marginal population increment.[7] According to the estimates in column 3 of Table 1, we would expect 47% of former East Germans to work. Using the 1995 wave of the German Socioeconomic Panel (GSOEP), we calculate that 45.2% of former East Germans worked full-time and 6.3% worked part-time.[8] Because the figures in Table 1 include full and part-time workers, the fraction working is (slightly) above the fraction of the marginal population that the model predicts would be working, but well within a standard error of the point estimate. For men the

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[6]The OECD data are for 1963-94.

[7]We are grateful to Sherwin Rosen for suggesting this test to us.

[8]In calculating these figures, we try to implement the same sample restrictions and concepts that are used in the BLS international data.

model predicts that 73% of the marginal population would be employed, and for women it predicts 23%. The actual employment rates for former East Germans were 65.6% and 46.1%, respectively -- slightly lower than predicted for men and higher than predicted for women, but roughly in the right ballpark.

II. Evaluation of Labor Market Rigidities: Employment and Population Growth by Skill Level

The most common explanation for the U.S.'s greater success in providing jobs for its growing population is that the U.S. has a more flexible labor market than other countries. To some, this explanation is tautological. If wages are perfectly flexible, then there would be no involuntary unemployment. Thus, downwardly rigid wages must account for involuntary unemployment. An alternative view is that labor market inflexibility is not the source of employment problems, but inflexibility elsewhere in the economy manifests itself in slower job growth. For example, restrictions on bringing new products to market or on starting new enterprises could reduce job growth.

Another potential form of labor market "rigidity" involves the social insurance system. A number of microeconometric studies have found that more generous Unemployment Insurance (UI) benefits -- in terms of both benefit levels and duration of benefit availability -- are associated with longer durations of unemployment spells (see Solon, 1985; Katz and Meyer, 1989; Meyer, 1990; Meyer, 1995; and Hunt, 1995).[9]

[9]Of course, this distortionary effect of UI and other social insurance programs must be weighed against their desirable features, such as consumption smoothing during times of economic hardship.

These studies do not prove that generous unemployment benefits reduce employment, however, because non-UI recipients (e.g., new entrants) may fill jobs left available by those on the UI program (see Levine, 1993). But in this connection it is noteworthy that one of the more robust findings in cross-country studies is that UI benefit generosity is associated with higher unemployment (e.g., see Layard, Nickell and Jackman, 1991 and Forslund and Krueger, 1996). More generally, social welfare benefits may increase workers' reservation wages, rendering a floor on market wages similar in effect to a minimum wage.[10]

In general, however, we find that the evidence that labor market rigidities are the main source of Europe and Canada's employment problems is not as strong as is conveyed by the widespread consensus in support of this view, and the stridency with which some people argue it. This is not to deny that some labor market rigidities restrict job growth. But we suspect that any country that seeks to solve its employment problems just by reforming its labor market will be disappointed, because more seems to be at work.

In its simplest form, the labor market rigidities view is as follows: Wages are downwardly inflexible in Europe because of wage floors, established by legal minimum wages, unions, insiders or welfare programs. Wage floors are less of a constraint in the U.S. because unions represent only one-tenth of private sector workers, the real value of the minimum wage is quite low ($4.75 per hour in 1997), and the safety net is weaker.

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[10]See Calmfors and Forslund (1991) for a theoretical model of how social welfare programs can affect union wage setting, and related empirical evidence for Sweden.

The next link -- quite plausibly enough -- is to assume all industrialized countries experienced a decline in demand for less skilled workers in the 1980s and 1990s. This demand shock has manifested itself in lower wages for less skilled workers in the U.S. and lower employment in Europe. As Krugman (1994) notes, many observers have concluded "that growing U.S. inequality and growing European unemployment are different sides of the same coin." This is a simple and appealing hypothesis.

Beyond the prediction of rising unemployment in Europe and growing inequality in the U.S., however, this explanation predicts that the decline in employment in Europe would be disproportionately concentrated among the groups of workers whose wages have fallen most in the U.S.; that is, among less-skilled and young workers. So far, the evidence on this prediction has been quite mixed. The findings of a number of studies challenge the hypothesis that the decline in employment (or rise in unemployment) is more concentrated in the low-wage end of the labor market in countries with weak overall employment growth than in countries with strong overall employment growth.

In an influential set of papers, Nickell and Bell (1995, 1996) find that between the 1970s and 1980s, the rise in unemployment rates in EC Europe (with the exception of Italy) for highly educated workers was substantial, and roughly proportional to the overall rise in unemployment. Furthermore, the U.S. experienced an increase in the unemployment rate of unskilled relative to skilled workers that was fairly similar to that of many European countries. As evidence, Nickell and Bell cite OECD data showing that between 1971-82 and 1983-90 the ratio of the unemployment rate for low educated workers to that for high educated workers rose from 3.8 to 4.2 in Germany, from 1.7 to

2.0 in Spain, and from 3.9 to 4.7 in the United States. One difficulty in interpreting these facts, however, is that the overall unemployment rate rose less in the U.S., so a constant ratio of the unemployment rates of unskilled to skilled workers would still imply a greater increase in the number of unskilled unemployed than skilled unemployed in countries with a greater overall rise in unemployment. In other words, whether we measure changes in the unemployment rate in levels or logs matters. Nonetheless, Nickell and Bell (1996, p. 307) conclude:

> We have analyzed the broad-brush hypothesis that European unemployment has risen dramatically relative to that in the United States because there has been a substantial shift in demand against the unskilled in both places but relative wages are rigid in Europe and flexible in the United States. We conclude that this hypothesis is inadequate.

The OECD sought to find a relationship between wage compression and unemployment rates or employment-population rates among youth and low-educated workers in a cross-section of countries. Their results indicated statistically insignificant and often wrong-signed correlations (see OECD, 1996; p. 75). The OECD summarizes this work as follows: "there is little solid evidence to suggest that countries where low-paid work is less prevalent have achieved this at the cost of higher unemployment rates and lower employment rates for the more vulnerable groups in the labour market, such as youth and women."

Card, Kramarz and Lemieux (1996) examine trends in employment-to-population

rates in the U.S., Canada and France, using comparable micro data sets.[11] They group the population in each country into education-by-age cells. Between 1979 and 1989 they find that low-wage groups in the U.S. suffered large real earnings declines, as to be expected. Additionally, they find a weak positive relationship between the change in the employment rate and the initial level of earnings. The decline in employment rates for lower-paid groups of American workers has been widely interpreted as a labor supply response, but we note it is possible that despite their steep decline wages remained above the full-employment equilibrium level for these workers so demand might have been a constraint as well. For France, the results for wage growth are quite different, while the results for employment are surprisingly similar. In contrast to the U.S., wage growth across age-education cells in France is unrelated to initial wage levels, probably a result of a labor market institutions that prevent wage adjustments. This is as expected. But changes in the employment-to-population rate in France are only weakly related to the initial wage level -- employment rates have declined by about the same amount regardless of the initial wage level of the cell. This pattern is inconsistent with the view that rigid relative wages have reduced employment especially among the low-skilled in France.

We extend Card, Kramarz and Lemieux by comparing wage and employment trends by skill groups in Germany and the U.S. For the U.S. we pooled data from the 1979 and 1991 outgoing rotation group files of the CPS. For each period, we constructed

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[11]See Edin, Harkman and Holmlund (1996) for related evidence for Sweden. Especially for adults, their results are similar to Card, Kramarz and Lemieux's findings for France.

age-by-education groups using three education levels (high school or less, some college, college or more) and seven age groups (25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-60). For each group, we calculate the mean log hourly wage and the employment-to-population rate (using CPS weights).

Unfortunately, no large data set similar to the CPS is publicly available for Germany. We therefore constructed employment-to-population rates using data from the "Mikrozensus" published annually by the Statistical Office.[12] This forces us to use the three education groups available there, which correspond to the school-leaving degrees of the various tracks of secondary school. Classifications by post-secondary education are also available, but the categories other than completed apprenticeship and university degree are so small as to render them useless for our purposes. Nevertheless, the secondary school degrees should work well for this exercise since they are good predictors of final educational attainment, skills, and wages. We picked the three education groups for the U.S. so that they are of roughly comparable size to the German groups. The German data are available for the same five-year age groups. We dropped the cell for the highest skill group in the age bracket 25-29, because we were worried that employment rates and wages for this cell might be contaminated by including students who have yet to complete university and be working part time. This provides a total of 20 age-by-education cells.

For Germany, we calculated the average log wage for each cell using the 1979

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[12]These are taken from Statistisches Bundesamt, Fachserie 1: Bevölkerung und Erwerbstätigkeit, Reihe 4.1.2: Beruf, Ausbildung, und Arbeitsbedingungen der Erwerbstätigen (Wiesbaden).

and 1991 "Qualifications and Careers Survey" (QaC) surveys. The QaC is a large sample (about 25,000 observations) that consists exclusively of employed persons. Therefore, we only use this data set to calculate the mean log hourly wage. The sample is limited to German civilians who are employed outside of apprenticeships. Using data for the late 1970s and early 1990s allows us to avoid any impact of unification, but this period still encompasses Germany's large rise in unemployment.

Results are presented graphically for American and German men in Figures 2 and 3, respectively. The figures reveal a pattern that is similar to what Card, Kramarz and Lemieux found for the U.S. and France. First, consider the U.S. Figure 2 plots decade-long log wage growth and the change in the employment-population rate for each cell against the 1980-81 average log wage for the cell. Real wages declined for the lowest wage cells between 1979-80 and 1990-91, and grew for the highest ones. This is consistent with the well-documented rise in the education premium and age-earnings profile in the U.S. The change in the employment rate, on the other hand, is only weakly correlated with the base wage.

The results on wages for German men in Figure 3 are noisier, but it is clear that the wage structure did not change very much between 1979 and 1991. If anything, a slight tightening of the wage structure seemed to have taken place during this period. Institutionally rigid wages may well explain the weak correlation between wage growth and the initial wage level of the cell. Turning to employment changes, there is no relationship between the change in the employment-to-population rate for the age-education cells and the base wage, despite the fact that wages appear rigid. If demand

fell for less skilled workers, we would expect to find employment declining most among the lowest wage groups; instead, there appears to be little relationship.

The summary regressions in Table 2 reinforce these observations. This table reports regressions of the change in the log wage or change in the employment rate on the log wage in the base period. Separate models were estimated for men and women. These regressions are weighted by the employment levels in the cell in the base period. The general pattern of results evident in Figures 2 and 3 appears to hold for women as well as for men. Indeed, contrary to the wage rigidity story, for both men and women the U.S. displays a steeper relationship between the change in the employment rate and the initial wage level than Germany.

In commenting on some of the cross-country evidence (including Nickell and Bell), Lindbeck (1996) correctly points out that "we should not expect a close statistical correlation in cross-country data between the development of relative wages and either aggregate unemployment rates or relative unemployment rates for different groups of workers" because the distribution of human capital across the workforce may vary across countries. But this explanation cannot explain why the cross-country relationships often slope the wrong way, or why there is evidently no relationship within countries such as Germany and France between the decline in employment and wage levels.

A look at some of the evidence cited in support of the relative-wage inflexibility explanation for the rise in European unemployment shows it to be less than compelling. For example, Siebert (1997) writes:

> A country which institutionally prohibits flexible wages at the lower end can

> be expected to have a low percentage of employment in low-paid jobs. This is exactly what can be observed. Defining low-paid workers as those who earn less than two-thirds of the median wage, the percentage of low-paid workers in total employment varies noticeably with the dispersion of earnings, from 5.2 percent in Sweden to 25 percent in the U.S. (Belgium 7.2, Netherlands 11.9, Italy 12.5, Germany 13.3, France 13.3, United Kingdom 19.6; OECD 1996, Table 3.2).

A problem with this comparison is that the observed empirical pattern is also exactly what one would expect if the wage floor had no effect on employment. To see this, suppose hypothetically that wage floors raise low-wage workers' earnings to just below the median wage in some countries, without reducing their employment. Then one would expect that countries with higher wage floors would have a lower fraction of "low-paid jobs". But the relevant question is whether the wage compression is associated with lower employment; were the bottom rungs of the ladder chopped off, or were they simply elevated? For the countries that Siebert lists, there is a slight positive correlation between the employment-to-population rate and the incidence of low-paid work.[13]

Blau and Kahn (1997) find that the employment-to-population rate among young workers without an apprenticeship qualification or higher degree in Germany is much higher than it is among high school dropouts in the U.S. The difference is especially striking among women. One would expect labor market inflexibility to cause employment rates for poorly educated youth to be higher in the U.S. than Germany.

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[13]The correlation between the employment-population rate using 1994 BLS data and the fraction of low-paid workers reported by Siebert is 0.37, with a p-value of 0.42. Belgium is excluded from this calculation because the BLS lacks data on Belgium. The OECD (1996) analysis cited above also finds insignificant and often wrong-signed correlations for a larger set of countries.

If the simple version of wage rigidities has trouble explaining the pattern of employment growth across skill groups, perhaps a more complicated model is appropriate. For example, wage floors may apply not only to the bottom of the wage structure, but to the middle and top as well -- possibly because of unions. Moreover, other forms of institutional rigidities, such as firing restrictions, may inhibit job growth throughout the distribution. We do not want to dismiss these other forms of labor market rigidities because they may have large effects on employment. But, unfortunately, there is scant direct evidence that they account for much of the employment problems in Europe. Furthermore, it is not clear theoretically that firing costs should lower average employment (see Bertola, 1992). Analyzing data for ten OECD countries, Bertola (1990) found that, as expected, more employment security is associated with a lower amplitude in cyclical fluctuations in employment. He did not find a clear relationship between employment or unemployment and firing restrictions, however. Anderson (1993), using data on the experience rating of the U.S. unemployment insurance system, finds that firms have higher average employment when they face higher layoff costs. On the other hand, some studies do find that job security legislation affects employment (see OECD, 1994, chapter 6 and Lazear, 1990). By their nature, it is hard to identify and empirically test the effect of these institutions on employment.

Finally, there is the puzzle of why the unemployment rate in Europe was well below that in the U.S. for decades, if labor market rigidities are so critical. For example, in only 5 of the 21 years between 1975 and 1996 did the unemployment rate in West Germany exceed that in the U.S. If a more flexible labor market is responsible for the recent low

unemployment rate in the U.S., what accounts for the relatively high unemployment rates that prevailed in the U.S. in the not too distant past? There are three possible reconciliations: (1) European labor markets have become more rigid; (2) labor market rigidities didn't matter much in the past because there were no adverse demand shocks; (3) rigidities take a long time to take effect after an adverse shock.

Each of these three reconciliations may have some merit, but they also have limitations. For example, which institutions changed, and what evidence links these changes to employment growth? Furthermore, it is hard to imagine that countries did not suffer adverse shocks earlier in the post-war period that would have made their rigidities more apparent.

Whether the increase in wage dispersion in the U.S. and the rise in unemployment in Europe represent two sides of the same coin is an open question. Although we suspect that rising wage inequality in the U.S. is related to a decline in demand for unskilled workers relative to skilled workers, the evidence that the decline in employment in France and Germany is concentrated among the unskilled is surprisingly shallow. It seems to us that more must be going on than just labor market rigidities -- although we have little doubt that labor market rigidities are an impediment to job growth in some countries.

III. Observations on U.S. Job Growth and Population Growth

How does the U.S. economy manage to provide so many jobs for a growing population? Several examples that are described below suggest that the U.S. has

managed to absorb population growth into employment with relatively little systematic change in real wage levels. Moreover, much evidence suggests that labor demand is fairly inelastic, so it is unclear why population injections do not reduce wages by more than is observed. The conflicting observations below suggest that U.S. employment growth is as much a mystery as a miracle. We do not profess to understand how the labor market equilibrates (or whether it equilibrates), but recognizing that large labor market adjustments take place with little wage adjustment is an important step in understanding the U.S. employment miracle.

Examples of Employment and Wage Adjustments to Population Shocks

o Immigration provides a classic population supply shock that would be expected to influence wages. Yet careful analyses of four large episodes of immigration -- the Mariel boatlift to Miami; the repatriation of Algerian French workers to southern France; the migration of workers from Angola and Mozambique to Portugal after Portugal lost its colonies; and the recent mass migration of from the former Soviet Union to Israel -- all reach the surprising conclusion that large immigrant flows did not depress the wages of natives (see Card, 1990; Hunt (1992); Carrington and De Lima, 1996; and Friedberg (1996)). Olson (1996) also notes that large population declines due to outmigration, such as was the case in Ireland, have not been accompanied by real wage increases.

o The swings in labor supply brought about by the baby boom and baby bust provide another example of large employment shifts with seemingly little consequence for wages.

The early work on the absorption of the baby boom cohort in the U.S. found that this large cohort of workers experienced modest wage reductions when they entered the labor market, but faster earnings growth thereafter which diminished their losses (see, for example, Welch, 1979). Subsequent research by Berger (1985) found that the wage reduction for the baby cohort tended to be larger and more persistent. But recent trends in the experience-earnings profile call for a re-examination of this conclusion. Notably, the entry of the smaller baby bust cohort in the late 1980s was accompanied by a sharp decline in earnings for young workers; this phenomenon has caused the experience-earnings profile to become much steeper. If cohort size were critical, one would have expected the cross-sectional experience-earnings profile to become flatter in this period because wages would have been bid up for the newly entering baby bust cohorts (see Card and Lemieux, 1996). Moreover, this pattern seems to be appearing worldwide (see Blanchflower and Freeman, 1997).

o Another example concerns female employment in the U.S., which has grown while the earnings gap between men and women has narrowed. For example, between 1979 and 1994, the fraction of women age 20 and over who were employed increased from 47.7% to 56.2% (while the employment rate for men declined by 3.9 points), and the female-to-male earnings ratio increased from .63 to .73.[14] One might be tempted to attribute these relative wage and employment trends to a demand shift in favor of women, but there is

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[14]These statistics are from Report on the American Workforce, U.S. Department of Labor, Washington, D.C. 1995. The earnings data are for women age 25 and over, and pertain to 1980 and 1994.

reason to doubt this explanation; in the 1980s, demand appears to have shifted toward higher wage groups, and women tend to earn less than men. An alternative explanation is that, in the past, women were discriminated against in the labor market. A decline in labor market discrimination against women, as well as related changes in social norms, caused both the relative wage and employment of women to rise.

o It is well known that aggregate real wages are only mildly pro-cyclical in the U.S.[15] Table 3 presents some recent evidence that reinforces this point. The table reports regressions of the annual change in the log of the real wage on the change in the unemployment rate and a time trend for several different measures of real wages and over various time periods. These results suggest that the weak responsiveness of real wages to the state of the business cycle has become even weaker since the 1970s.[16] Although the aggregate wage data may be biased by changes in the composition of the workforce over the cycle, the employment cost index (ECI) data attempt to adjust for composition changes by holding the job mix constant. Notably, the extent of pro-cyclical wage movements are even smaller with the ECI compensation measure.[17]

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[15]The literature on the cyclicality of real wages began with Dunlop (1938). For a thorough survey, see Abraham and Haltiwanger (1995).

[16]The price index used to deflate these series is the CPI-W. Abraham and Haltiwanger report that wages tend to be more procyclical when they are deflated by this price index than by the Producer Price Index (PPI).

[17]See Solon, Barsky and Parker (1994) for evidence from longitudinal data that changes in the composition of the workforce over the business cycle masks greater procyclical movements in real wages.

o The preceding observations might be interpreted as evidence that employment demand is highly elastic -- a shift in population can be employed with little change in wages. The direct evidence on employment demand elasticities, however, suggest a fairly low level of elasticity. For example, the center of the range of Marshallian demand elasticities emphasized in Hamermesh's (1993) review of the literature is around -.50.[18] Thus, with labor demand relatively inelastic, it seems anomalous that the large population swings described above resulted in employment gains without reducing wages.

Others, of course, interpret the weakly pro-cyclical tendency of real wages as evidence of large intertemporal labor supply responses. This too is contradicted by much microeconometric evidence (see Killingsworth, 1983 for a review).

IV. Theoretical Explanations

A great deal of labor market adjustment in the U.S. seems to take place without systematic real wage movements. In some cases, the adjustment is associated with demand shifts, while in others it is associated with supply shifts; yet in either scenario wage changes appear only weakly related to employment movements. How can this be? While labor market rigidities may be part of the explanation for inflexible wages, by themselves they are hard pressed to explain why employment often rises or falls with population changes at seemingly fixed wages. We speculate below that recognizing the

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[18]Further evidence comes from the very small employment effects of minimum wage increases, at least in the U.S. A variety of evidence has found only small or undetectable movements in employment associated with minimum wage increases (see Card and Krueger, 1995, and Brown, Gilroy and Kohen, 1982).

role of certain product market restrictions in addition to wage rigidity can help explain the observed empirical facts.

One reason why employment may grow with population at a fixed real wage is that the economy displays constant returns to scale. A problem with this interpretation, of course, is that as population is doubled the capital stock and other inputs may not necessarily double. But one often-overlooked form of inputs may rise roughly in proportion to population; namely, "entrepreneurial talent." An influx of population may bring about an equal proportionate increase in the number of people with skills capable of becoming an employer.

This point can be made clear in a modified version of Lucas's (1978) model of employment and management choice. In Lucas's original model, a fixed population chooses between supplying labor as an employee or as an entrepreneur. All people are equally productive if they work as laborers, while there is a distribution of entrepreneurial talent across people.[19] In Lucas's model, there are no restrictions on entry into management or on wages. All output is sold at a constant price, taken as the numeraire. Consequently, all resources are fully employed. A number of commenters have noted that wages are more rigid in Europe and that new entrepreneurs are more constrained in Europe. We add these two constraints to the model.

First consider the effects of a constraint on wages, such as a wage floor. As in the standard model, firms would choose to hire less labor to equate the marginal product

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[19]The idea of modelling a distribution of entrepreneurial talent goes back to at least J.-B. Say (see Palmer, 1997, Chapter 4). The Lucas model can also be thought of as a special case of the Roy model.

of labor with the binding wage floor. We assume that unemployment is distributed uniformly across the labor force. If the elasticity of demand for labor is less than one, the expected wage of laborers will rise because of a wage floor, and this will draw marginal managers into the for-hire workforce. In particular, the least talented managers would now be enticed to queue for work, causing them to release their workers in the process.

Now consider the employer side of the market. In a series of cross-country studies, McKinsey Global Institute (MGI) emphasizes product market regulations, restrictive zoning laws, and restrictions on employers -- rather than labor market rigidities -- as the main barriers to growth in employment and productivity in many sectors. For example, in a recent study of Germany and France, MGI (1997) concludes, "In all the sectors studied, the main barriers to higher productivity have been product market regulations that limit fair and global competition ...." As a simple way of capturing the constraint on employers, suppose that no more than α proportion of the population is permitted to become an entrepreneur. The restriction α probably varies across countries, as does the wage floor. If the number of employers is restricted, then some potential employers become employees. Employers with the least managerial talent (and smallest firms) would be the first to become employees. The demand for labor is more inelastic when α is a binding constraint on entrepreneurs because one margin for labor adjustment -- namely the formation of new firms -- is curtailed by regulation.

In equilibrium, there are unemployed resources in this model, and some workers would like to open up their own firms. An exogenous increase in population would be

associated with a proportionate increase in employment and unemployment, as long as the proportion of the population that is permitted to become an entrepreneur is constant. If, however, the restriction on entrepreneurs constrains the number of entrepreneurs to grow less than proportionately with population, then the unemployment rate will rise as the population rises, and employment will rise but less than proportionately with population. Intuitively, the constraint on the employer-side of the market becomes more intense with population growth if the number of firms cannot rise in proportion with population.

More generally, the demand curve for labor will become more inelastic if there are constraints on capital or other factors of production that limit the supply of these factors. This result is a manifestation of Marshall's third law of derived demand -- the elasticity of demand for labor declines if the supply of capital to a firm is inelastic (see Hicks, 1932, Appendix). Certain constraints in the capital market or on entrepreneurs can obviously have the effect of making the supply of these resources inelastic. In this situation, the labor demand curve will be constrained relative to a situation in which capital is elastically supplied.

Figure 4 illustrates the effect of a wage floor and constraints on the labor demand curve. The unconstrained labor demand and supply curves are given by DD and SS, respectively. The wage is fixed at w-bar. The constraint on entrepreneurs causes the effective demand curve (denoted D'D') to rotate clockwise, as depicted. We have drawn the effective demand curve quite steep, to emphasize that product market constraints cause the demand curve to become more inelastic. Notice that simply lowering the wage

floor will have a modest impact on employment because the demand constraint causes the effective demand curve to become more inelastic. An increase in population will shift the effective demand curve to the right if the population increase relaxes the constraint (as in the model with heterogeneous entrepreneurs), causing employment to rise but not wages.

This model also may help in cross-country comparisons. Compared to Germany, for example, we suspect that the wage constraint is lower in the U.S. and the demand constraint is closer to the unconstrained demand curve. Furthermore, because start up firms are less constrained in the U.S., as population grows we expect the effective demand curve to shift out about in proportion with population growth. By contrast, in Germany it is much more difficult to start new businesses, which might contribute to the country's difficulty in providing additional jobs when population expands.

Notice also that a model in which the quantity of output is constrained in the aggregate would have many of the same features as the model in Figure 4. In the Barro and Grossman (1971) model, for example, the product price is fixed above the equilibrium level.[20] The quantity of output demanded is therefore determined by the product demand curve. Just enough labor is hired to meet the constrained product market demand. Although the marginal product of labor exceeds the wage, employers do not hire additional workers because they cannot sell their output. Barro and Grossman ignore capital, so effective labor demand is perfectly inelastic with respect to the wage in their model. Allowing for capital-labor substitution will introduce some elasticity to the effective

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[20]For a review of non-Walrasian models, see Benassy (1986).

demand curve, but the elasticity of labor demand will still be less than in the unconstrained case because there is no scale effect. An increase in population would cause the demand curve to shift to the right if demand in the product market rises with the population. For example, if population increases because of immigration, the demand for goods and services may also rise to satisfy the larger population. An unsatisfactory aspect of this model, however, is that the reason for the product price to be fixed above the equilibrium level is unspecified.

The point of this discussion is to emphasize that rigidities may arise from areas outside the labor market, but have an important impact on labor demand. Moreover, these restrictions may be partially relaxed as the population grows. Restrictions on the number of start-up companies or capital market imperfections or product market regulations or restrictive zoning rules or restrictive store hours may depress employment in many countries. The U.S. is less restrictive than many countries when it comes to starting new enterprises and bringing new products to market.[21] These barriers may constrain employment by making effective demand relatively inelastic, the same way that wage floors make effective labor supply elastic in sticky-wage models.

With little direct evidence on the importance of product market constraints, at this stage our theoretical predictions should be regarded largely as conjectures (hence our title). The impact of product market constraints on the demand for labor should be a

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[21]Even in the U.S., however, Carroll et al. (1996) find that a reduction in entrepreneurs' personal income tax rates induces them to hire more workers. A plausible interpretation of this finding is that entrepreneurs are liquidity constrained, and finance additional expansions with their tax windfalls.

priority for future research. Identifying cross-country differences in product market environments for specific industries -- including the competitive structure of the market and role of trade associations -- and linking these differences to employment growth would be one route for future work in this area to take.

V. Conclusion

The U.S. has been very successful at providing jobs for our growing population. A great deal of employment adjustment seems to take place with relatively little real wage movement. The empirical observations and theoretical conjectures in this paper suggest that both supply-side constraints (e.g., wage floors and social insurance programs) and demand-side constraints (e.g., restrictions on entrepreneurs and product market regimes) are important. A growing population may help relax some of the demand-side constraints, thereby increasing the demand for labor while its supply increases and wages remain roughly constant. For example, an increase in population is likely to increase the pool of individuals with the talent and inclination to become an entrepreneur, thereby increasing the demand for labor. The constraints on the demand-side of the market may be much greater in many European countries than in the U.S., and may prevent employment from rising with population.

Much policy discussion has focused only on the supply side (e.g., wage rigidities) of the market. A neglected concern is that restrictions on entrepreneurs and product market regulations and institutions may distort labor demand, causing the labor demand curve to shift in and become more inelastic. In this scenario, providing additional wage flexibility would generate more wage dispersion but possibly little additional employment. Just as sharpening one blade of a scissor will not greatly enhance performance if both blades are dull, reducing wages without relaxing constraints on the demand curve may be less effective than is commonly expected.

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Table 1: Determinants of Cross-Country Employment Growth, 1959 - 95

Dependent Variable: Log Employment

	All			Men			Women		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Log Population	--	1.29 (.03)	--	--	1.21 (.03)	--	--	1.60 (.07)	--
Year (÷ 100)	.95 (.05)	-.52 (.04)	-.10 (.09)	.43 (.04)	-.98 (.04)	-.66 (.08)	1.88 (.07)	.07 (.09)	.49 (.17)
Year x U.S. (÷ 100)	1.01 (.13)	.40 (.06)	--	.81 (.12)	.27 (.05)	--	1.09 (.19)	.41 (.12)	--
Year x Germany (÷ 100)	-.73 (.13)	-.18 (.06)	--	-.47 (.12)	-.09 (.05)	--	-1.27 (.20)	-.37 (.13)	--
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log Population Interacted with:									
U.S.	--	--	1.28 (.06)	--	--	1.17 (.05)	--	--	1.58 (.11)
Canada	--	--	1.25 (.05)	--	--	1.10 (.04)	--	--	1.69 (.08)
Australia	--	--	.97 (.05)	--	--	.90 (.05)	--	--	1.32 (.09)
Japan	--	--	.90 (.07)	--	--	1.27 (.06)	--	--	.49 (.13)
France	--	--	.62 (.98)	--	--	.60 (.09)	--	--	.86 (.20)
Germany	--	--	.47 (.14)	--	--	.73 (.10)	--	--	.23 (.31)
Italy	--	--	.40 (.12)	--	--	.68 (.10)	--	--	.51 (.22)
Netherlands	--	--	1.27 (.10)	--	--	.79 (.09)	--	--	2.70 (.18)
Sweden	--	--	1.05 (.15)	--	--	.80 (.15)	--	--	1.69 (.28)
U.K.	--	--	.69 (.23)	--	--	.60 (.18)	--	--	1.43 (.46)
R^2	.994	.999	.999	.995	.999	.999	.986	.995	.999

Notes: Sample size is 351 for Columns 1 - 3 and 343 for Columns 4 - 9.

Table 2: Regression of Change in Log Wage or Employment-Population Rate on Base Wage, United States and Germany

Independent variables	Men		Women	
	Δ mean ln(wage)	Δ empl. rate	Δ mean ln(wage)	Δ empl. rate
1. U.S. (20 groups)				
ln(1979 wage)	.393 (.038)	.075 (.018)	.309 (.056)	.092 (.038)
2. Germany (20 groups)				
ln(1979-80 wage)	-.140 (.084)	.008 (.018)	-.104 (.066)	-.069 (.053)

Table 3: Cyclicality of Real Wages, Various Wage Series and Time Periods

	Change in Unemployment Rate	Trend	n
A. Series: Employment Cost Index; Quarterly Data			
1981:Q1 - 1997:Q1	-.07 (.12)	-.09 (.03)	65
B. Series: Production/Nonsupervisory Workers (CES); Annual Data			
1948 -1996	-.44 (.20)	-.09 (.02)	49
1948 - 1980	-.46 (.25)	-.14 (.03)	33
1981 - 1996	-.19 (.21)	-.00 (.04)	16
C. Series: Production/Nonsupervisory Workers (CES); Monthly Data			
1965:M1 - 1997:M3	-.66 (.08)	-.07 (.01)	387
1981:M1 - 1997:M3	-.15 (.06)	-.00 (.01)	195
1970:M1 -1979:M12	-1.12 (.14)	-.48 (.06)	120
1980:M1 - 1989:M12	-.24 (.13)	.16 (.06)	120
1990:M1 - 1997:M3	-.05 (.10)	.28 (.03)	87

- Continued -

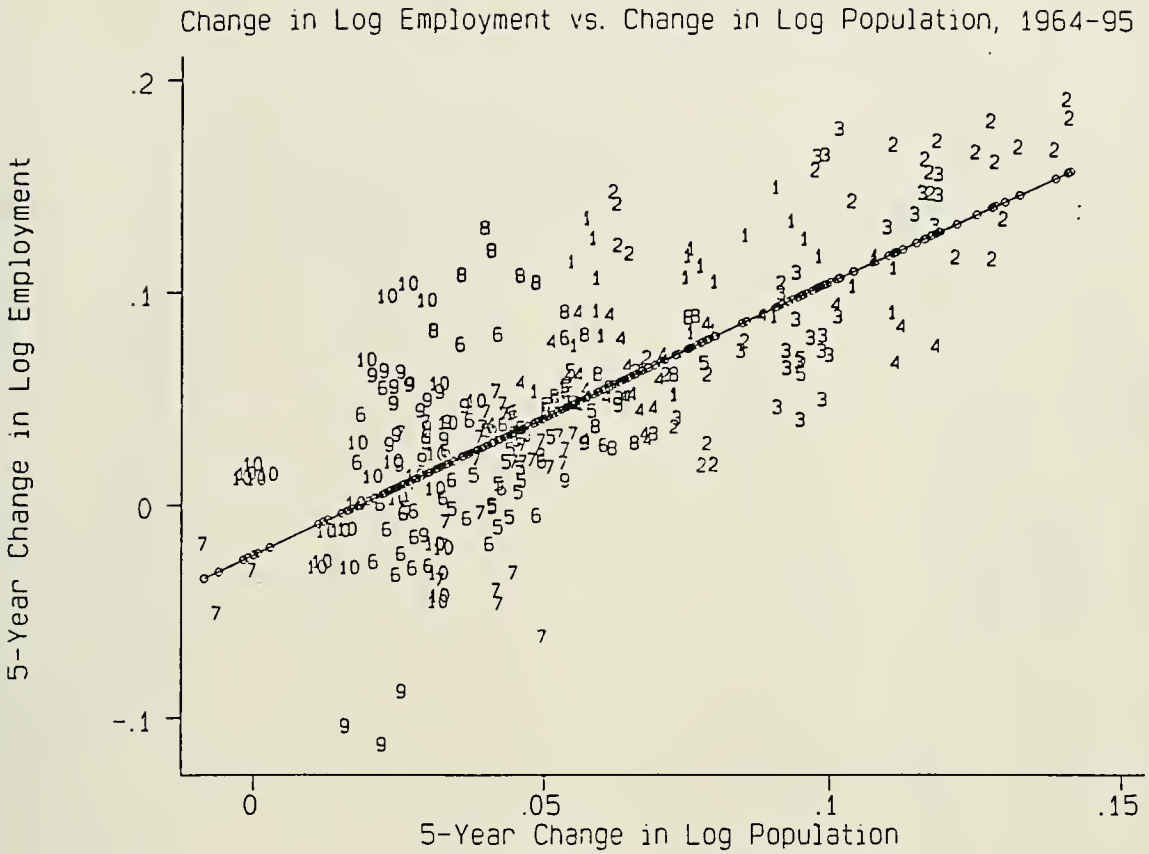
Table 3: Continued

D. Hourly Earnings by Decile from Outgoing Rotation Groups of Current Population Survey, 1973-96

Percentile	Change in Unemployment Rate	Min. Wage Increase	Trend	n
10th	-.95	.034	.09	23
	(.48)	(.014)	(.10)	
50th	.04	-.009	-.06	23
	(.24)	(.007)	(.05)	
90th	-.36	-.006	-.04	23
	(.26)	(.008)	(.05)	

Notes: Reported coefficients are from regressions of the annual change in the log real wage (deflated by CPI-W) on the annual change in the unemployment rate (divided by 100), a linear time trend (year divided by 100), and an intercept. In panel D, a variable indicating whether the minimum wage increased that year is also included; this variable equals one if the minimum wage increased on January 1st of the year, and the fraction of the year in which the higher minimum wage was in effect for years in which the minimum increased after January 1st. The dependent variable used in Panel D was provided by Jared Bernstein; all other wage data are from the BLS.

Figure 1



Country codes: U.S.=1; Canada=2; Australia=3; Japan=4; France=5; Germany=6; Italy=7; Netherlands=8; Sweden=9; UK=10.

Source: BLS International Comparisons Program.

Figure 2
Change in Wages and Employment Rates
U.S. Men, 1979 - 1991

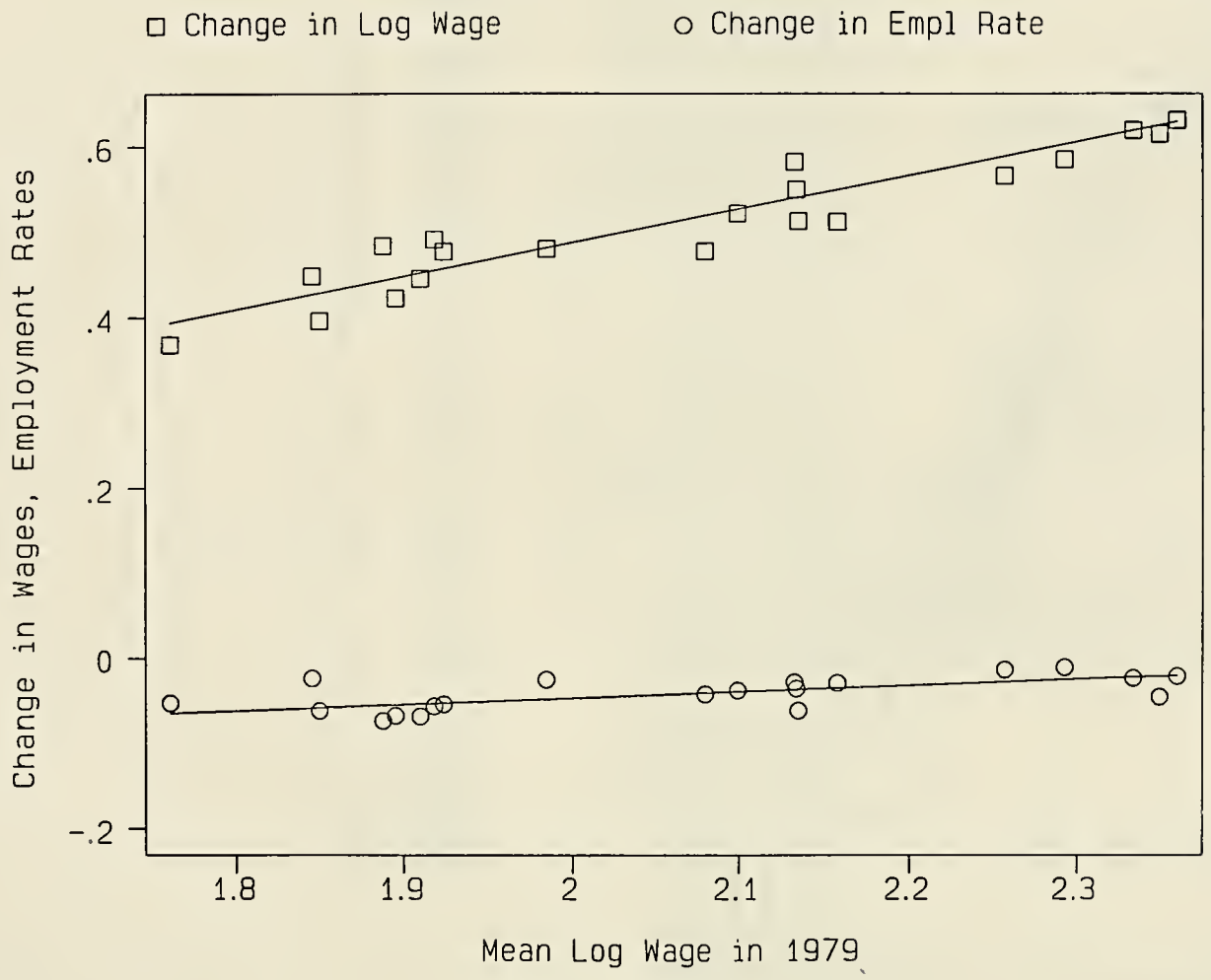


Figure 3
Change in Wages and Employment Rates
German Men, 1979- 1991

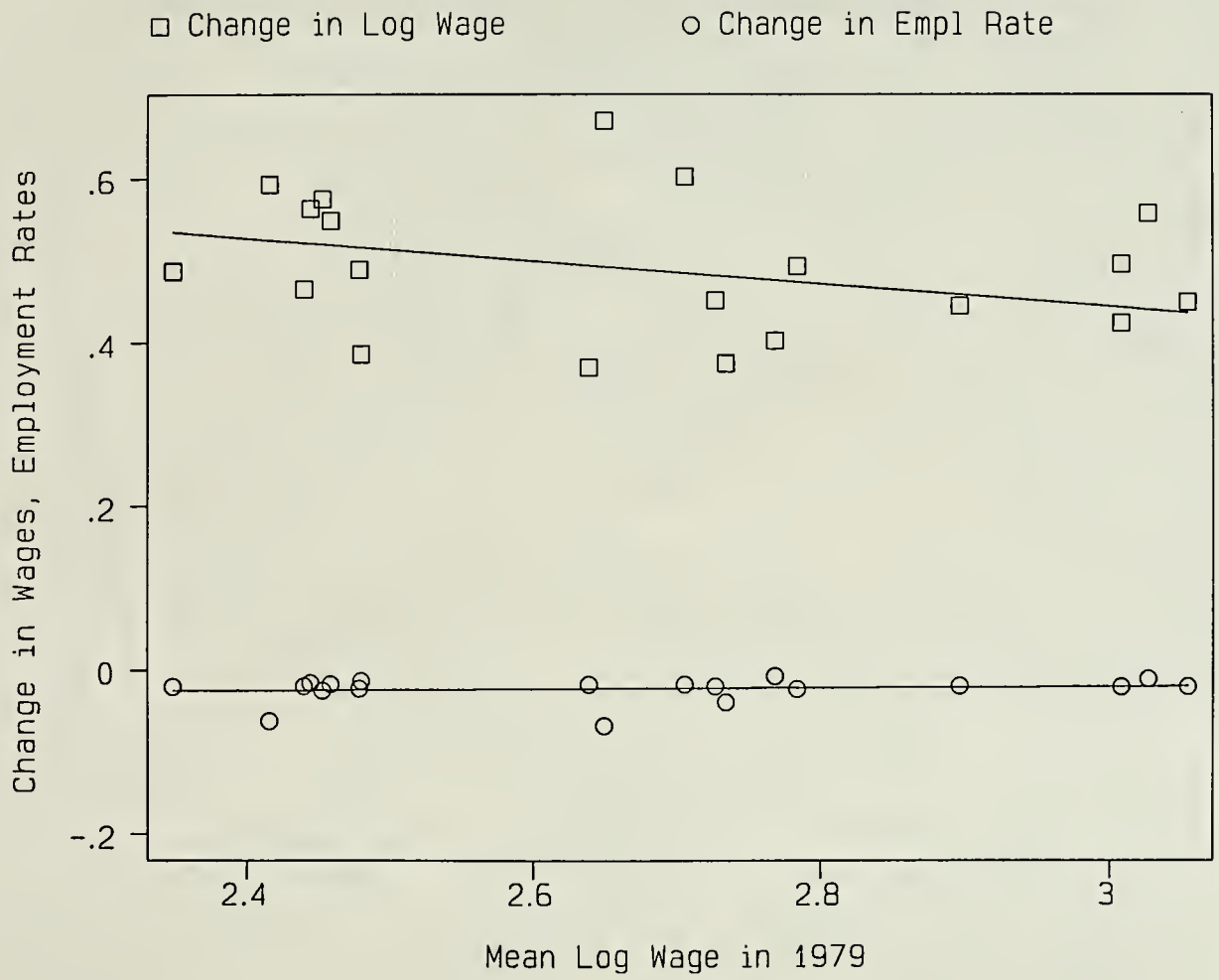


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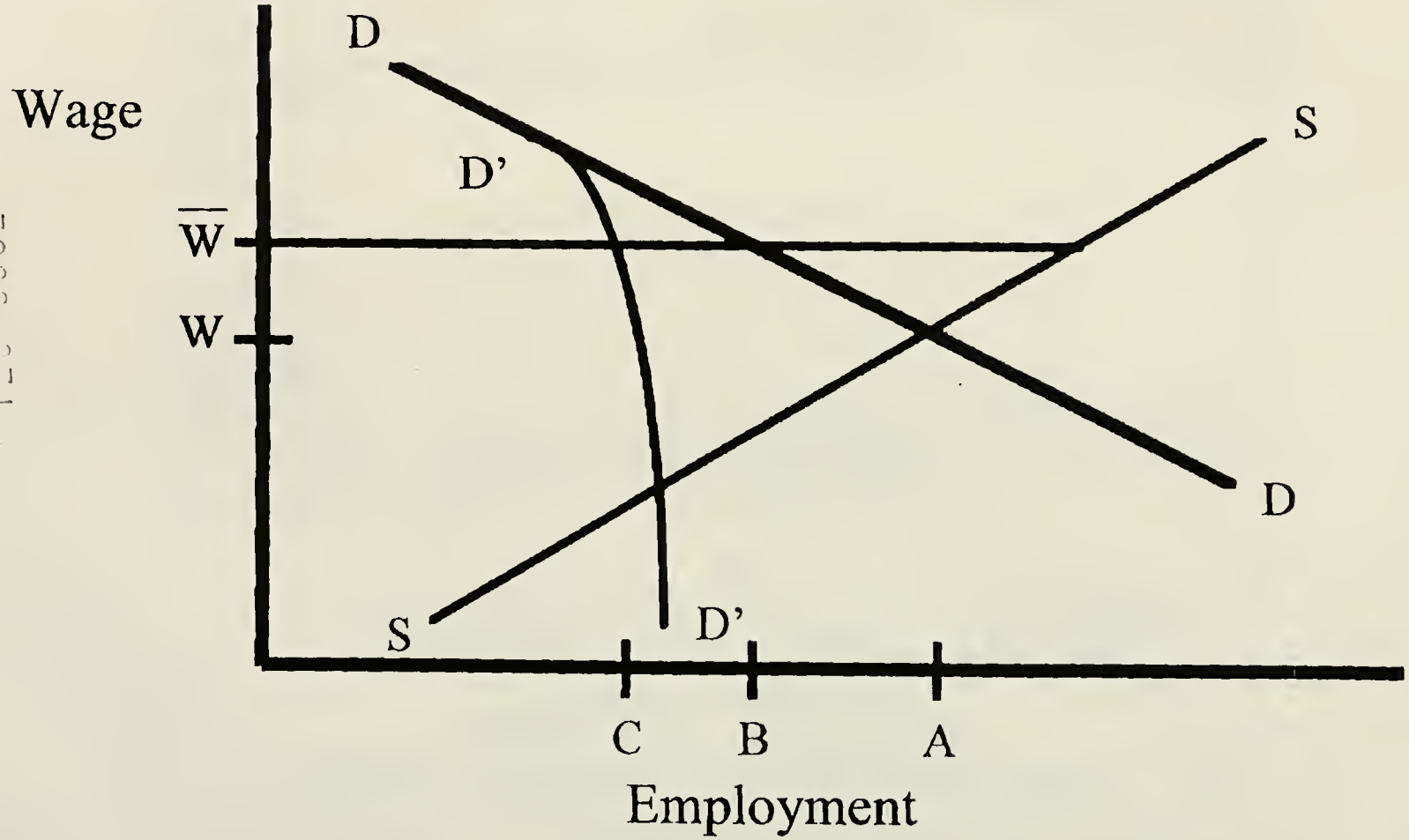
Figure 4

Supply and Demand with Constraints



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